

Application Serial No.: 09/801,979
Amendment dated: March 7, 2001

Reply to Office action of: October 4, 2004
Attorney Docket No.: ARC920000134US1

REMARKS

This Amendment is in response to the Office Action of October 4, 2004. Applicants respectfully submit that all the claims presently on file are in condition for allowance, which action is earnestly solicited.

CLAIMS REJECTION UNDER 35 U.S.C. 103

Claims 1-7 and 9-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Forest et al. (US 5,999,895), hereinafter referenced as Forest, in view of Lemelson et al. (US 6,421,064), hereinafter referenced as Lemelson, and further in view of van Cruyningen (US 5,805,167), hereinafter collectively referred to as the "cited references". Claim 8 was rejected under 35 U.S.C. 103(a) as being unpatentable over Forest in view Lemelson and Cruyningen as applied to claim 13, and further in view of well known prior art (MPEP 2144.03).

Applicants respectfully traverse these rejection grounds and submit that the claims as amended, are not obvious in view of the cited references, and are thus patentable thereover. In support of this position, Applicants submit the following arguments.

A. Legal Standard for Obviousness

The following legal authorities set the general legal standards in support of Applicant's position of non obviousness, with emphasis added for added clarity:

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- MPEP 706.02(j), "**To establish a prima facie case of obviousness, three basic criteria must be met.** First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) ... The initial burden is on the examiner to provide some **suggestion of the desirability** of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the **references must expressly or impliedly suggest the claimed invention** or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985)."
- **In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious.** The prior art perceived a need for mechanisms to dampen resonance, whereas the inventor eliminated the need for dampening via the one-piece gapless support structure. "Because that insight was contrary to the understandings and expectations of the art, the structure effectuating it would not have been obvious to those skilled in the art." 713 F.2d at 785, 218 USPQ at 700 (citations omitted).
- MPEP §2143.03, "All Claim Limitations Must Be Taught or Suggested: To establish prima facie obviousness of a claimed invention, **all the claim limitations must be taught or suggested by the prior art.** In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "**All words in a claim must be considered** in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)."

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- MPEP §2143.01, "The Prior Art Must Suggest The Desirability Of The Claimed Invention: There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a prima facie case of obvious was held improper.). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).
- "Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." *In re Fine*, 837 F.2d at 1075, 5 USPQ2d at 1598 (citing *ACS Hosp. Sys. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)). What a reference teaches and whether it teaches toward or away from the claimed invention are questions of fact. See *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 960-61, 220 USPQ 592, 599-600 (Fed. Cir. 1983), cert. denied, 469 U.S. 835, 83 L. Ed. 2d 69, 105 S. Ct. 127 (1984). "
- "When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references. See *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987). "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See MPEP 2143.01; *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).
- "With respect to core factual findings in a determination of patentability, however, the Board cannot simply reach conclusions based on its own understanding or experience -- or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to

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- some concrete evidence in the record in support of these findings." See *In re Zurko*, 258 F.3d 1379 (Fed. Cir. 2001).
- "We have noted that evidence of a suggestion, teaching, or motivation to combine may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved, see *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), *Para-Ordinance Mfg. v. SGS Imports Intern., Inc.*, 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995), although "the suggestion more often comes from the teachings of the pertinent references," *Rouffet*, 149 F.3d at 1355, 47 USPQ2d at 1456. The range of sources available, however, does not diminish the requirement for actual evidence. That is, the showing must be clear and particular. See, e.g., *C.R. Bard*, 157 F.3d at 1352, 48 USPQ2d at 1232. Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence." E.g., *McElmurry v. Arkansas Power & Light Co.*, 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993) ("Mere denials and conclusory statements, however, are not sufficient to establish a genuine issue of material fact."); *In re Sichert*, 566 F.2d 1154, 1164, 196 USPQ 209, 217 (CCPA 1977)." See *In re Dembiczyk*, 175 F.3d 994 (Fed. Cir. 1999).
 - "To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." See *In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1998).
 - The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 916 F.2d at 682, 16 USPQ2d at 1432. See also *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is

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conformable to a ground surface of varying slope not suggested by combination of prior art references).

- If the **proposed modification would render the prior art invention being modified unsatisfactory** for its intended purpose, **then there is no suggestion or motivation** to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

B. Brief Summary of the Present Invention

Prior to presenting substantive arguments in response to the obviousness rejection, it might be desirable to review the present invention in view of the problems it addresses. The complication to Chinese pinyin input is that most Chinese characters are homophonic on a wide scale. When a user types the pinyin of a character, such as "zhong", the computer software for Chinese text input displays many candidate characters with the same pronunciation, numbered for selection purposes. The display is typically a "page", usually a one-line graphical window. The first eight candidate characters for "zhong" could be

1中 2种 3重 4众 5种 6终 7忠 8肿

having the following meanings:

1. center; 2. type; 3. heavy; 4. mass; 5. kind; 6. finale; 7. loyal; and 8. swollen, respectively.

The user must then select a choice from the candidate list by typing the identifying number, e.g., the number "1" for the character corresponding to "center". If more than eight characters correspond to a pinyin word, pressing the "page down" key displays additional candidates also numbered 1 to 8 which may be selected as before.

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This multiple choice selection process renders current pinyin input much less efficient than typing in alpha-based languages. A major source of this inefficiency is the difficulty of touch-typing a numeric key to select the target character. On a standard "QWERTY" keyboard typing the numeric keys may be much more difficult than typing the alphabetic keys. This is due in part to the distance between the numeric keys and the "home row" where the hand naturally rests during typing, i.e., the ASDFGHJKL keys.

In addition, many if not most typists have to look at and then type the numeric keys. If the character candidates for the pinyin word exceed one "page", the typist must also "page down" to view additional candidates, consuming additional time. Consequently, the two important advantages of touch-typing, speed and the low demand for visual attention, both suffer when Chinese input is required. A text entry system for Chinese input that avoids numeric keying and thus maintains the user's touch-typing ability is a compelling goal in Chinese text input.

Another source of inefficiency in Chinese language text entry is the choice reaction time, i.e., the time required to choose the correct character from the list presented by the text entry software program. Numerous methods have been proposed to reduce the frequency and number of choices in pinyin-based input.

Conventional eye-tracking technology uses the eye gaze as a direct control channel to move a cursor on the screen, or to assist in entering text. However, there are two deficiencies in using eye-tracking technology for

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direct control. First, eye gaze cannot be very precise given the one-degree size of the fovea and the subconscious jittery motions that the eyes constantly produce. Second, the eye is not naturally suited for deliberate control functions. At times, eye movement is voluntary while at other times the eye moves involuntarily in response to external events. Current eye-tracking systems cannot easily distinguish deliberate eye movement from accidental eye movement.

To use eye-tracking technology in text entry of Chinese characters, a system is needed which allows the eye to select the desired Chinese graphic without requiring long-term deliberate control of the eye movement. Such a system would use eye movement to highlight the Chinese character while the user presses a key to select that character for entry; this is referred to as multiplexing.

C. Application of the Obviousness Standard to the Present Invention

Considering now the obviousness rejection in view of the representative claim 13, Applicants have amended claim 13 to clarify that the present system comprises an eye-tracking apparatus that monitors the user's eye natural looking position. This is in comparison to what is misunderstood as a "gaze tracking" apparatus that (a) requires the user to stare at the characters for a period of time; and (b) that acts as a control mechanism. Reference is made to the Summary of the Invention above that provides additional details about the distinction between the conventional gaze tracking apparatus and the present eye-tracking apparatus.

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According to the present invention, the eye-tracking apparatus tracks the eye's natural looking position without requiring deliberate staring at the preselected one or more candidate characters. Once the candidate character(s) is(are) selected, then the input command confirms the selection.

More specifically, and with respect to an exemplary Chinese text input, the characters are imputed via an input device, such as a keyboard. Eye-tracking information is used implicitly at the Chinese character candidate selection stage to remove the additional efforts of searching and hitting numeric selection keys (please refer to the example above). As a result, a 2-D high-accuracy gaze tracking is not required by the present invention.

This is clearly a departure from Forest that describes the conventional eye-gazing method, and that does not require "dwell time" to confirm the input command. The dwell time (or stare time) is clearly distinguished over by claim 13, as currently amended. In particular, the present invention as represented by claim 13 recites tracking the user's eye natural looking position is implemented without requiring deliberate staring at the preselected one or more candidate characters, in order to select a target character. Consequently, Forest and the combination of Forest, Lemelson, and Cruyningen teach away from the present invention.

Similarly, independent claims 1 and 25 are not obvious in view of the cited references, for containing generally comparable elements and limitations to those of claim 13. As a result, the independent claims 1, 13, and 25 and the claims dependent thereon are allowable over the cited

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references of record, whether taken individually or in combination with each other.

CONCLUSION

All the claims presently on file in the present application are in condition for immediate allowance, and such action is respectfully requested. If it is felt for any reason that direct communication would serve to advance prosecution of this case to finality, the Examiner is invited to call the undersigned at the below-listed telephone number.

Respectfully submitted,

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